Announcements

- Register for the Epi-Tech Trainings:
  1. Log-on or Request log-on ID/password: https://tiny.army.mil/r/zB8A/CME
  2. Register for Epi-Tech Surveillance Training: https://tiny.army.mil/r/4TgNE/EpiTechFY17

- Please enter your name/service and e-mail into the chat box to the left or email the disease epidemiology program at: usarmy.apg.medcom-phc.mbx.disease-epidemiologyprogram13@mail.mil
  - You will receive a confirmation email within the next 48 hours with your attendance record

- Please mute your phones and DO NOT place us on hold. Press *6 to mute/unmute your phone.

Influenza in the DoD

Defense Health Agency, Public Health Division, Armed Forces Health Surveillance Branch,
AF Satellite and
USAF School of Aerospace Medicine, Department of Public Health
Presented by: DoD Global Respiratory Pathogen Surveillance Program
Lt Col Federinko, MD, MPH; Lisa Shoubaki, MPH; Gregory Wolff, MPH
DSN: 798-3196 (Comm: 937 938-3196)
26 September 2017

U.S. Army Medical Department
U.S. ARMY PUBLIC HEALTH CENTER

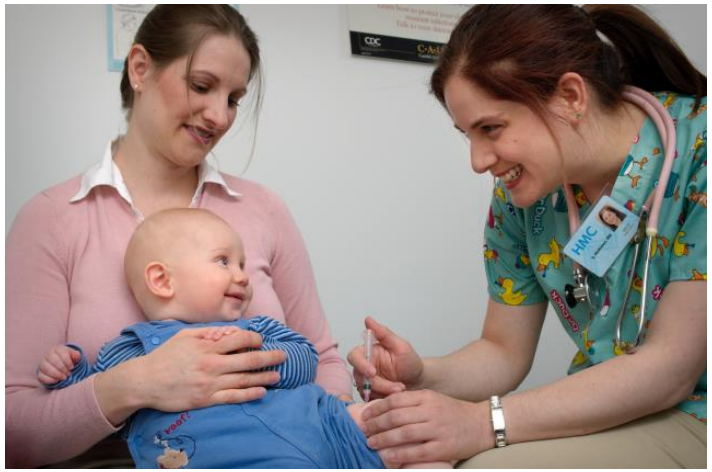
NAVY AND MARINE CORPS PUBLIC HEALTH CENTER
PREVENTION AND PROTECTION START HERE

Influenza Outline

I. About Influenza
   I. Clinical Information
   II. Subtypes and Strains
   III. Antigenic Drift/Shift
   IV. Vaccine Effectiveness
   V. Influenza Vaccine
   VI. 2016-2017 Influenza Trends
II. Influenza Surveillance in Military Populations
   I. Military Impact
   II. Reportable Medical Event Case Definition
   III. Influenza-like Illness (ESSENCE)
   IV. Surveillance Activities by Service
III. Contact Information

Clinical Information

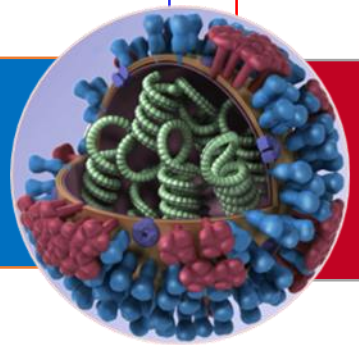
- Symptoms - Fever, cough, sore throat, runny nose, headache, fatigue, and body aches
- Spread by droplets or touching contaminated surfaces
- Incubation period is 1-4 days (2 days on average)
- Severity depends on flu virus, vaccination status, and health status
- Recovery: few days to two weeks (1 week on average)



Subtypes and Strains

- Evolves rapidly
  - Responsible for most epidemics and all pandemics
- Divided into subtypes based on surface proteins:
  - Hemagglutinin (HA)
  - Neuraminidase (NA)
- Immunity-related changes
  - Changes to regions of the HA surface protein (called antigenic shift & drift) can affect human antibody responses to the virus

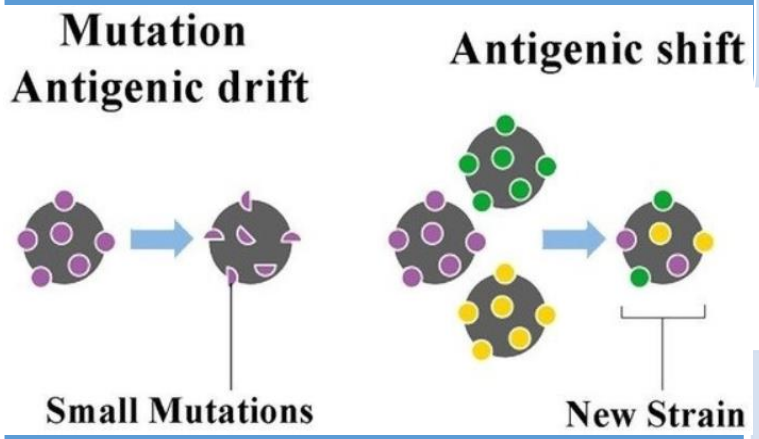
Influenza A



- Gradually changing virus
  - Can cause epidemics but Pandemics do not occur
- Classified by strains based on their lineage:
  - Yamagata
  - Victoria
- Only known to infect humans

Influenza B

Antigenic Drift



- Small gradual changes that occur over time and create a new strain that may not be recognized by immune system
- Reason that new influenza vaccine is manufactured/distributed each year

USAFSAM monitors these changes through molecular sequencing

Antigenic Shift

- Abrupt major change that produces a novel virus (Not previously encountered in humans)
- Caused by direct animal-to-human transmission or mixing of human and animal genes within the same individual or animal

Vaccine Effectiveness (VE) 2016-2017 season

- Population: DoD healthcare beneficiaries (excluding Active Duty members)
- Analyses by influenza type and subtype and beneficiary group (children, adults)
- Cases: confirmed by RT-PCR, viral culture, or FilmArray®
- Controls: test-negative for influenza
- Odds ratio (OR) and 95% confidence intervals (CI) were calculated using multivariable logistic regression adjusted for age, month of illness, and region
  - VE= (1-OR) x 100%

Adjusted Estimates of Vaccine Effectiveness

Flu Type	Population	Cases	Controls	VE [95%CI]
Overall	Children	703	822	51 [39, 61]
Overall	Adults/Retirees	366	452	42 [22, 56]
Overall	All Dependents	1069	1274	47 [37, 56]
Influenza A(H3N2)	All Dependents	769	1274	45 [33, 54]
Influenza B	All Dependents	290	1274	55 [39, 66]

Influenza Vaccine

Recommended 2017-2018 Northern Hemisphere influenza vaccine:

Trivalent (three strains):

- *A/Michigan/45/2015 2009 H1N1-like virus
- A/Hong Kong/4801/2014 H3N2-like virus
- B/Brisbane/60/2008-like virus (B/Victoria lineage)

Quadrivalent (four strains):

- B/Phuket/3073/2013-like virus (B/Yamagata lineage)

*Switched from 2016-17 to 2017-18 in the Trivalent vaccine

2016-2017 Influenza Trends

Respiratory Highlights of 2016-2017

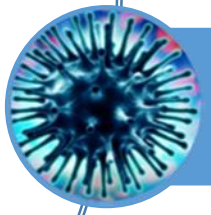
- Outbreak of avian lineage influenza A H7N2 among cats in an animal shelter in New York City in December 2016
  - One person was infected during prolonged unprotected exposure to the respiratory secretions of infected cats
  - No person-to-person spread of the virus was identified
- Highly pathogenic avian influenza (HPAI) A (H5N1) in U.S.
  - Occurs mainly in birds and is highly contagious among birds
  - HPAI detected for the first time this year in Tennessee in March
  - 700 birds died from the avian flu and 72,800 were destroyed
  - Severe economic losses for the agricultural industry
- Eleven human infections with novel influenza A in Ohio from swine at fair
  - These cases brought the total number of H3N2v infections during 2017 to 12
  - No Hospitalizations

Military Impact

“The flu is very unpredictable when it begins and in how it takes off” – Harvey V. Fineberg

Acute Respiratory Diseases accounts for 25% to 30% of infectious disease-related hospitalizations

Increased risk of spreading a respiratory pathogens through global travel



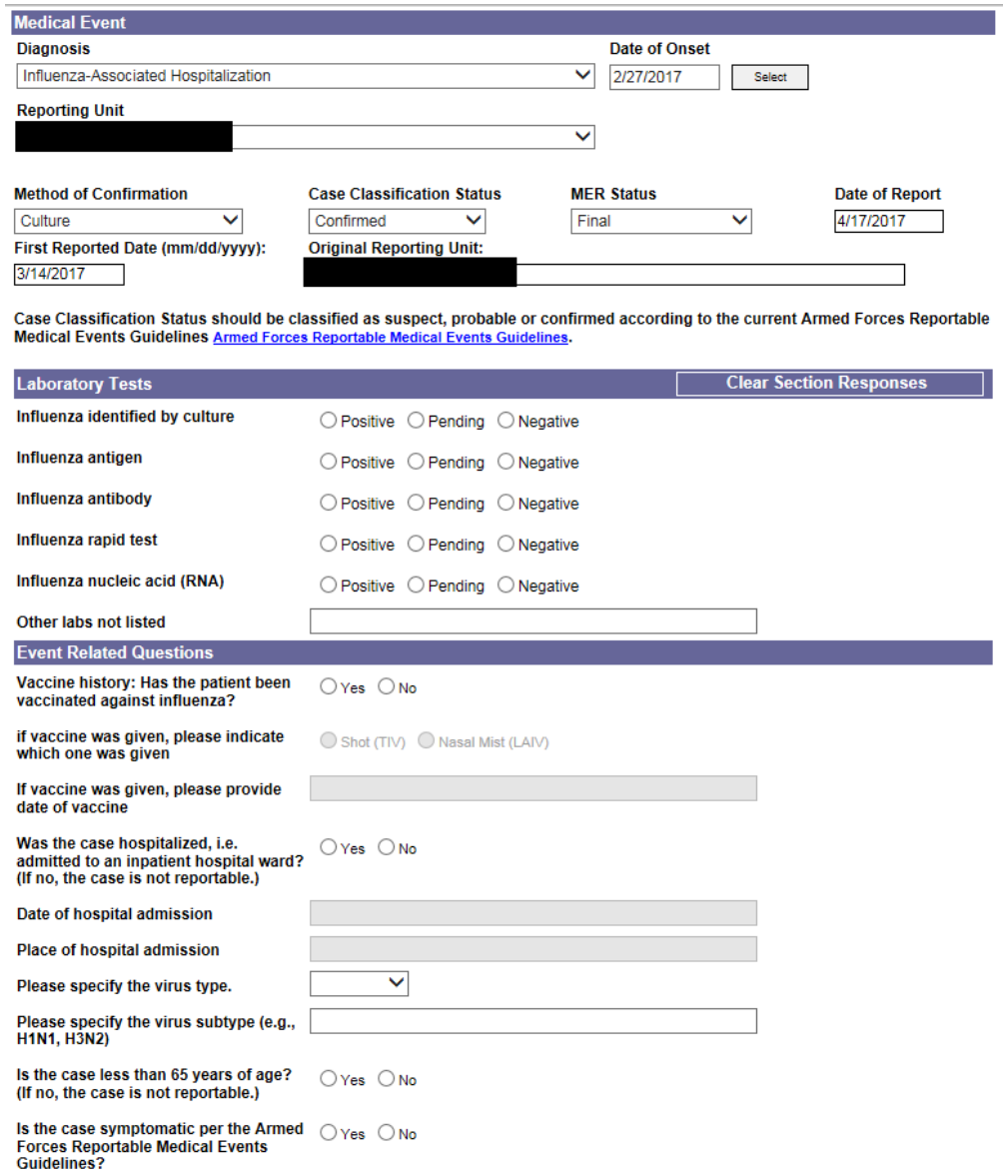
Training environments are well suited for the spread of emerging respiratory pathogens

Increased risk of novel respiratory diseases in deployed settings

Reportable Medical Events (RMEs)

- "A reportable event may represent an inherent, significant threat to public health and military operation. These events have the potential to affect large numbers of people, to be widely transmitted within a population, to have severe/life threatening clinical manifestations, and to disrupt military training and deployment. Timely accurate reporting of probable, suspected or confirmed cases ensures proper identification, treatment, control, and follow-up of cases"
  - AFI 48-105, DA PAM 40-11 & AR 40-50, BUMED INST 6220.12C

- DRSi
  - Web-based application
  - Identify, collect, document, manage, and track information on RMEs
  - Completeness/timeliness of data is user-driven

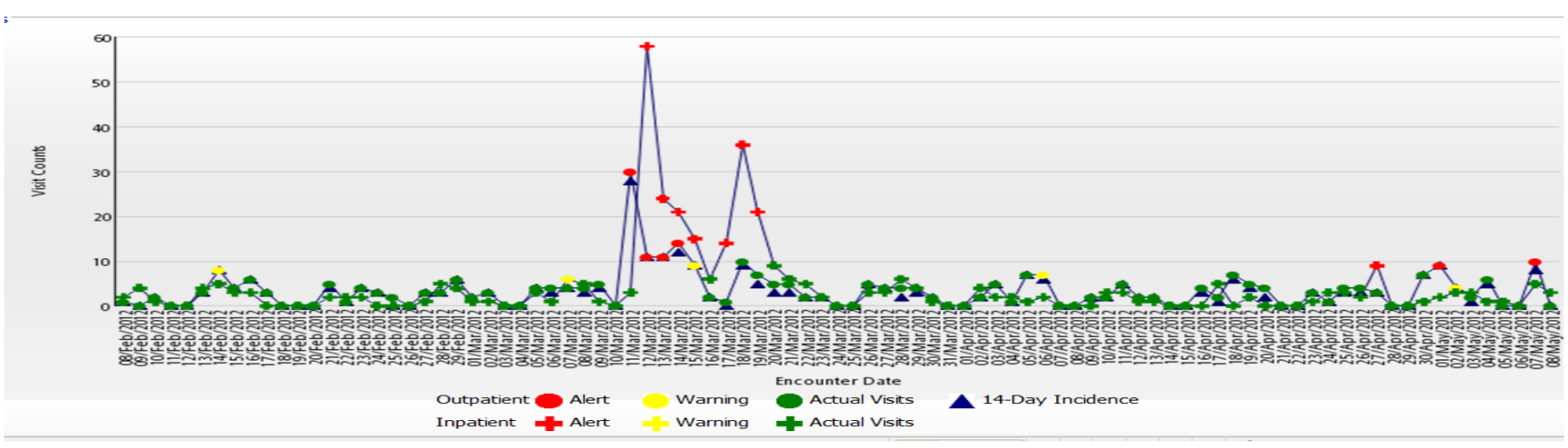


2017 Influenza Case Definition for reporting

Influenza-associated Hospitalization	
Criteria	
Included population	< 65 years of age Any beneficiary type/mandate status
Patient status	Influenza-associated hospitalization Fever ≥ 100.5˚F with cough or sore throat in absence of other diagnosis
Laboratory	Positive confirmatory test (culture, DFA, IFA, rapid, PCR) AND -Hospital admission date was ≤ 14 days after a positive influenza test or -Hospital admission date was ≤ 3 days before a positive influenza test
Case Classification	
Confirmed	Meet population and patient status criteria with positive confirmatory lab test
Notes	
	For all confirmed cases, a nasal wash specimen should be submitted to an appropriate lab for further influenza lab testing (i.e. sequencing)

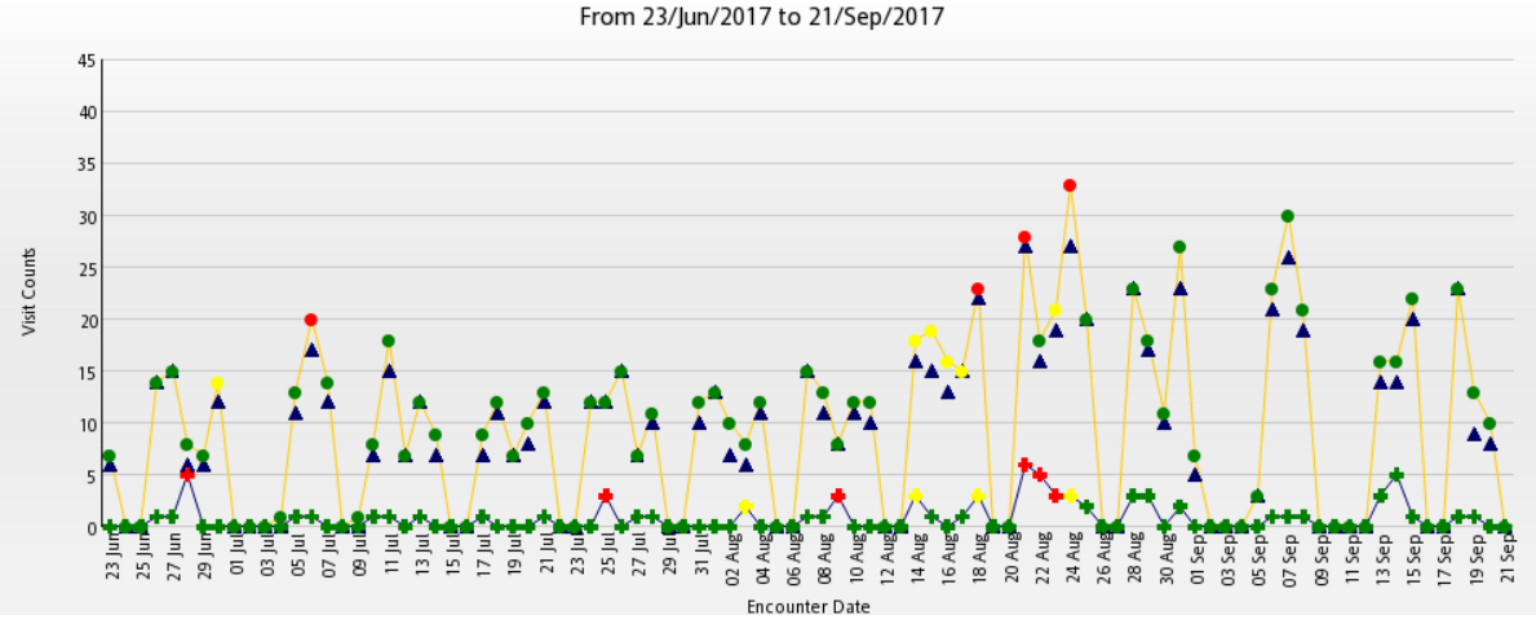
ILI Syndromic Surveillance

- Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE)
  - Designed by Johns Hopkins University Applied Physics Laboratory and DoD
  - Internet-based syndromic disease surveillance system
  - Used by DoD and many civilian health departments
- Useful for early detection with maximum sensitivity
  - Often at the cost of specificity (false alerts)



ILI Syndromic Surveillance

- ILI
  - Includes ICD and Chief Complaint data
- Influenza Specific
  - Influenza specific ICD codes only
- For more information on ESSENCE, please refer to
  - ESSENCE



Service Specific Influenza Surveillance

Air Force Influenza Surveillance Activities

DoD Global, Respiratory Pathogen Surveillance Program

Air Force: Instruction 48-105, Surveillance, Prevention, and Control of Diseases and Conditions of Public Health or Military Significance (15 July 2014)

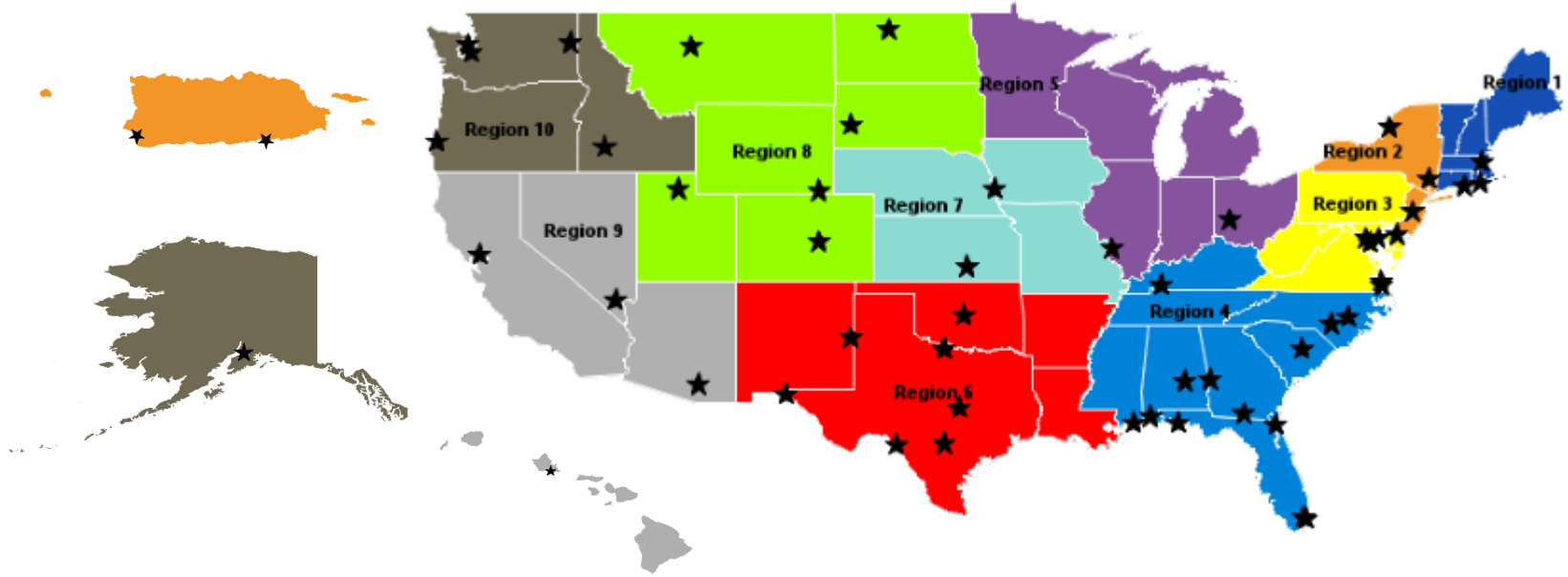
Army: OP-ORD 17-79, 2017 – 2018 INFLUENZA PREVENTION PROGRAM: SURVEILLANCE AND VACCINATION

Navy and Marine Corps: BUMED POLICY Aug 2015, Policy for Influenza Vaccine Use for the 2015-2016 Influenza Season, and BUMEDINST 6230.15B Immunization for the Prevention of Infectious Disease

Program Overview

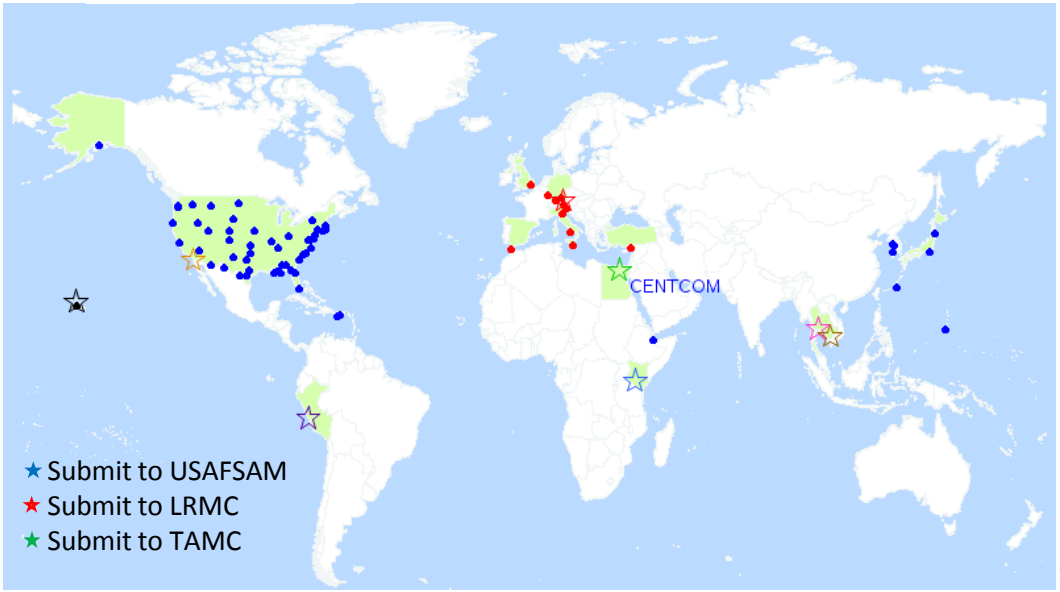
CONUS Sites: 46

- Air Force: 31
- Army: 8
- Navy & Marine Corps: 4
- Coast Guard: 2
- DHA: 1



OCONUS Sites: 33

- Air Force: 17
- Army: 8
- Navy & Marine Corps: 7
- Coast Guard: 1



Testing Capabilities

Types of tests performed

1. Multiplex PCR using a Respiratory Pathogen Panel
   - Detects up to 20 respiratory pathogens
   - Higher throughput of all respiratory pathogens, 96 specimens in 5 hours

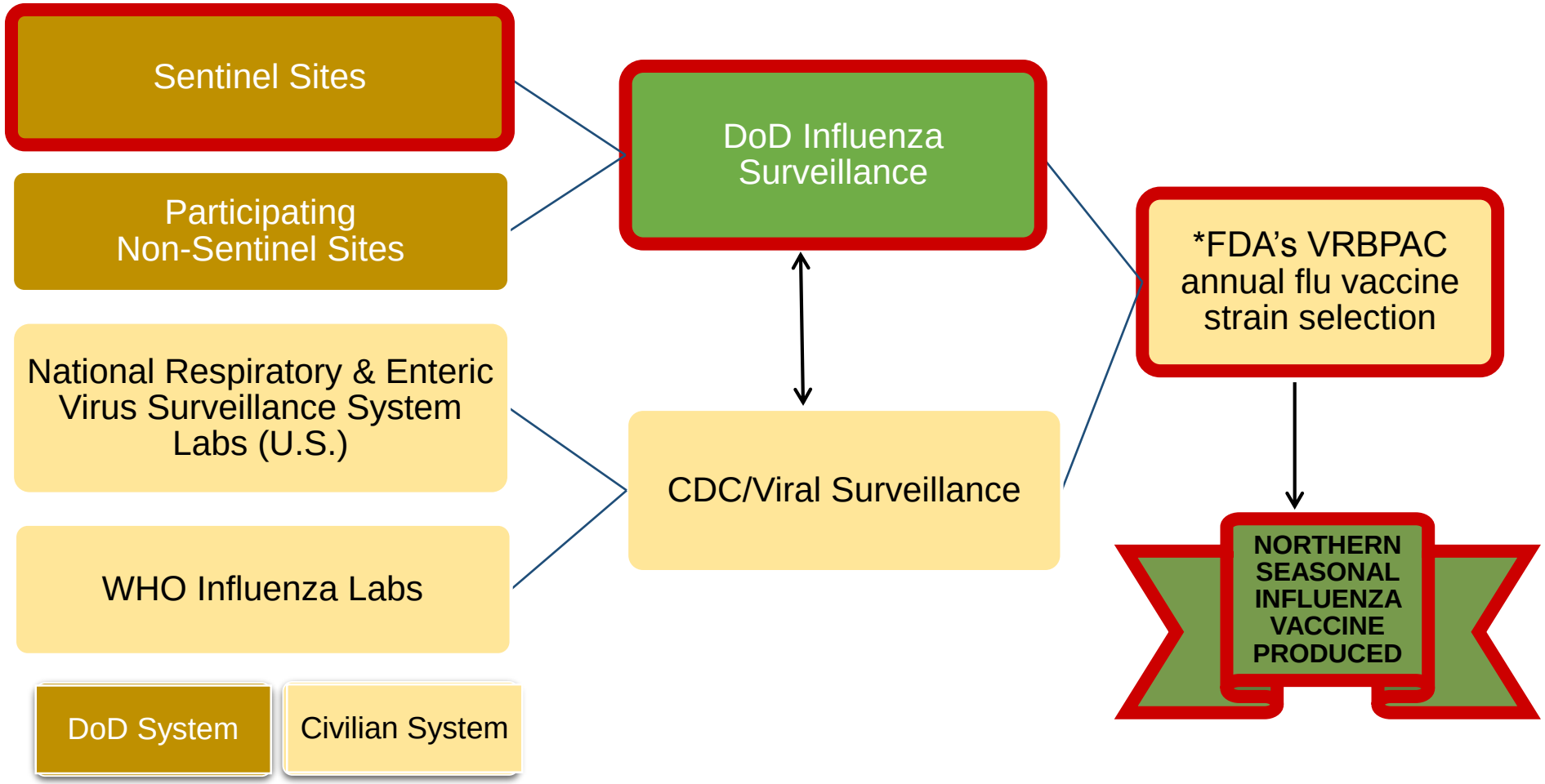
2. ***Next Generation Sequencing**
   - Whole genome sequencing
   - Higher throughput & low turnaround time

3. Viral culture (up to 10 days for negative result)
   - Detects flu and other respiratory viruses

4. Influenza A/B and subtyping PCR
   - CDC assay

* New testing capabilities for 2017-18 season

Surveillance Process and Vaccine Development



*Food and Drug Administration (FDA), Vaccines and Related Biological Products Advisory Committee (VRBPAC)

Navy Influenza Surveillance Activities

- Participate in USAFSAM sentinel surveillance program
- Shipboard and Recruit ILI surveillance
  - Fleet Disease and Injury Surveillance (D&I)
  - Naval Health Research Center (NHRC) FRI program
  - Navy Environmental Preventive Medicine Unit (NEPMU) ILI project
- NMCPHC Epi Data Center Weekly Influenza Situation Reports
- NMCPHC Influenza Advisory
  - Guidance on surveillance and reporting for local medical departments

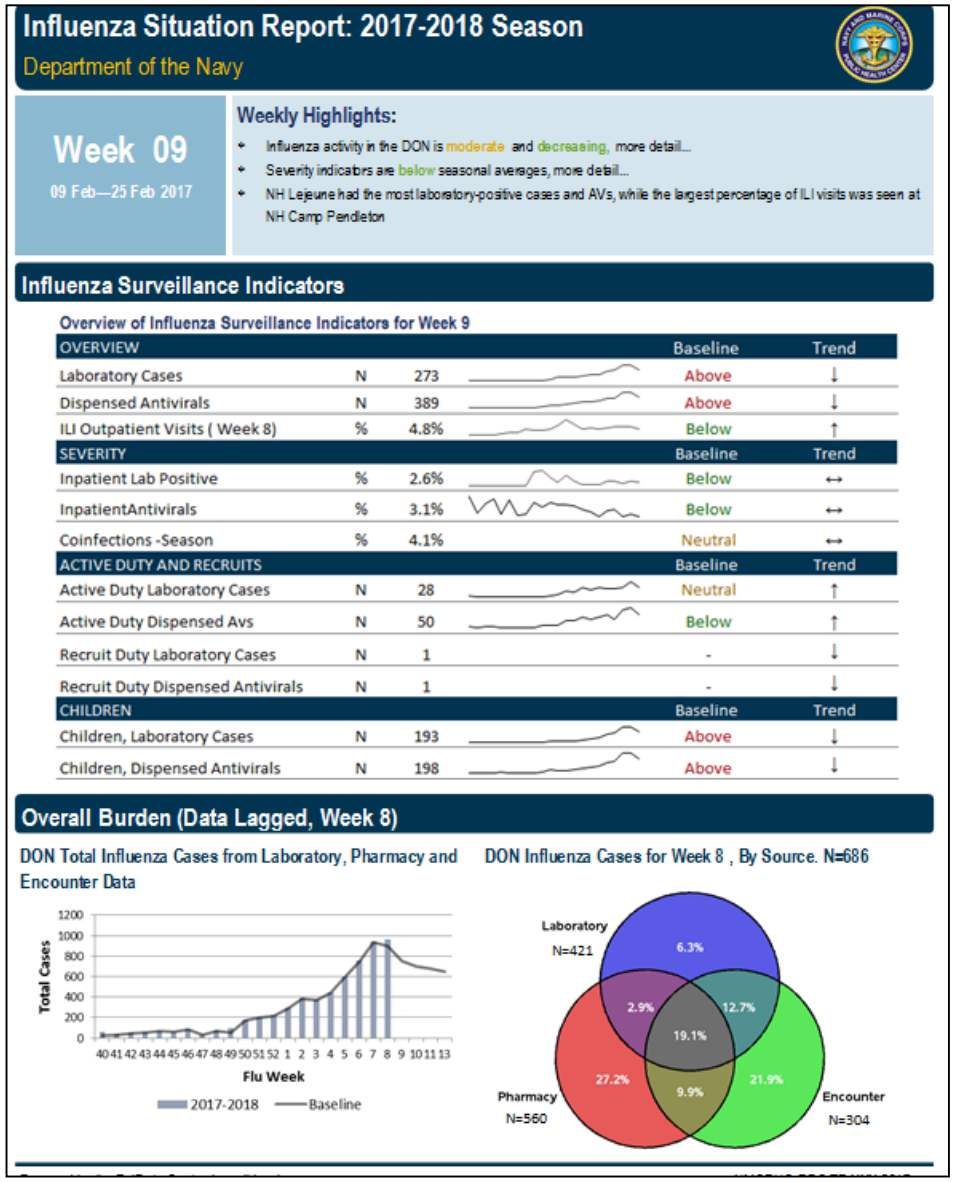
Navy Influenza Surveillance Activities

- Fleet D&I Surveillance
  - Tracking of electronic AHLTA-T/SAMS encounters in TMDS data
    - Develop D&I report, including Fever and Respiratory categories
    - Identify ships having increased illness and reach out to them
    - Work to improve compliance
  - Units who wish to continue to report via xls spreadsheet - templates and reporting guidance can be found at: website http://www.med.navy.mil/sites/nmcphc/program-and-policy-support/disease-and-injury-reports

Navy Influenza Surveillance Activities

- NHRC FRI program
  - Includes recruit training centers and participating ships
  - Describe circulating respiratory pathogens, including influenza
  - Identify pathogens in support of outbreaks
  - Contributes to FDA's VRBPAC discussion for development of next year's influenza vaccine
  - Contact NHRC at usn.point-loma.navhlthrschcensan.list.nhrc-fri-surveillance@mail.mil for more information and to receive routine reports
- Regional NEPMU ILI project – target smaller vessels
- Can describe ILI outbreaks, anticipate duration of illness, describe extent of outbreak, and identify patterns to curtail disease spread

Navy Influenza Surveillance Activities



Influenza Situation Report: 2017-2018 Season

Department of the Navy

Week 09

09 Feb—25 Feb 2017

Weekly Highlights:

- Influenza activity in the DON is moderate and decreasing, more detail...
- Severity indicators are below seasonal averages, more detail...
- NH Lejeune had the most laboratory-positive cases and AVs, while the largest percentage of ILI visits was seen at NH Camp Pendleton

Influenza Surveillance Indicators

Overview of Influenza Surveillance Indicators for Week 9

OVERVIEW			Baseline	Trend
Laboratory Cases	N	273	Above	↓
Dispensed Antivirals	N	389	Above	↓
ILI Outpatient Visits (Week 8)	%	4.8%	Below	↑
SEVERITY			**Baseline**	**Trend**
Inpatient Lab Positive	%	2.6%	Below	↔
InpatientAntivirals	%	3.1%	Below	↔
Coinfections -Season	%	4.1%	Neutral	↔
ACTIVE DUTY AND RECRUITS			**Baseline**	**Trend**
Active Duty Laboratory Cases	N	28	Neutral	↑
Active Duty Dispensed Avs	N	50	Below	↑
Recruit Duty Laboratory Cases	N	1	-	↓
Recruit Duty Dispensed Antivirals	N	1	-	↓
CHILDREN			**Baseline**	**Trend**
Children, Laboratory Cases	N	193	Above	↓
Children, Dispensed Antivirals	N	198	Above	↓

Overall Burden (Data Lagged, Week 8)

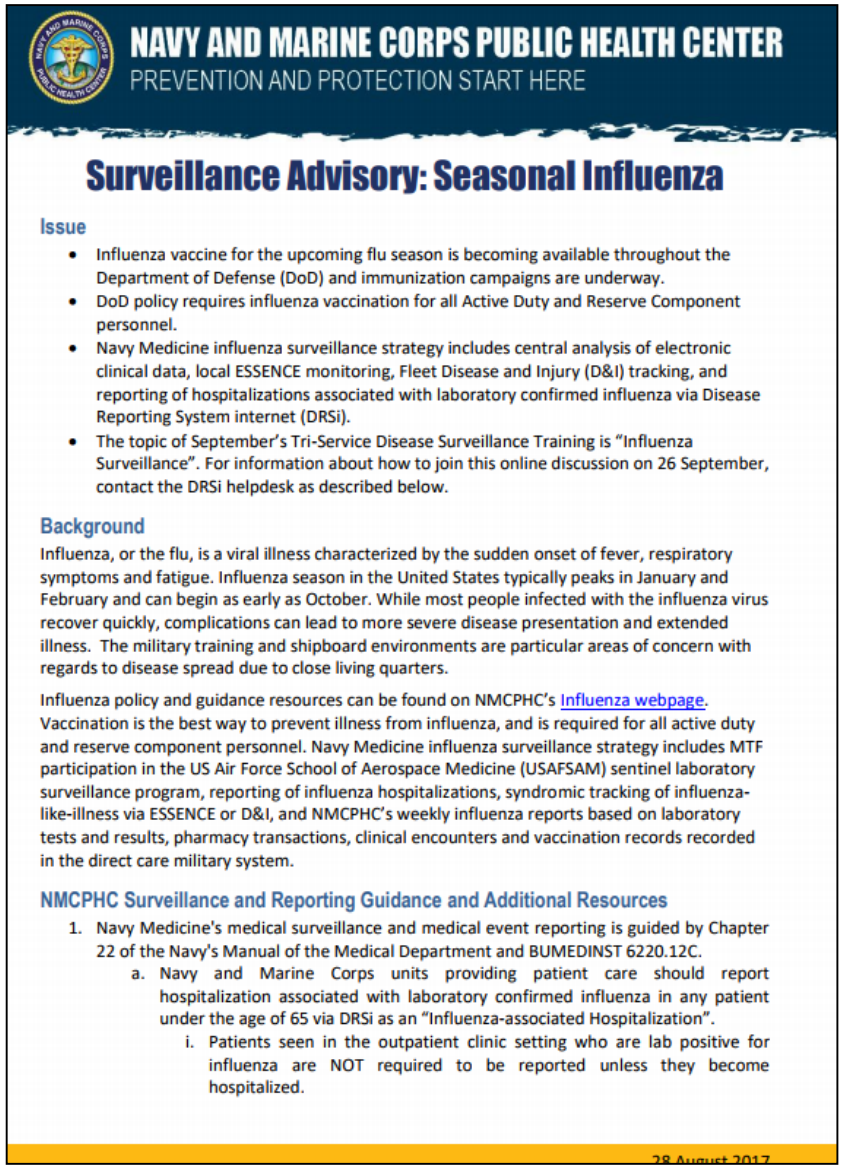
DON Total Influenza Cases from Laboratory, Pharmacy and Encounter Data

DON Influenza Cases for Week 8 , By Source. N=686

- Weekly SITREP including:
  - Vaccination rates
  - Overall flu burden
  - Active Duty/recruit burden
  - Description of hospitalized and outpatient cases and trends
  - Noteworthy information in the open source media
- Other reports to track vaccine use and disease burden for BUMED
- To access the SITREP: https://www.med.navy.mil/sites/nmcphc/epi-data-center/influenza/Pages/default.aspx
- For more information, email: usn.hampton-roads.navmcpubhlthcenpors.list.nmcphc-epi@mail.mil

Navy Influenza Surveillance Activities

- NMCPHC Seasonal Influenza Advisory:
  - Navy flu reporting requirements in DRSi
  - Surveillance recommendations for upcoming season including syndromic surveillance using ESSENCE or D&I processes
  - Contact area NEPMU for outbreak investigation, risk assessment, and lab testing support
  - http://www.med.navy.mil/sites/nmcphc/program-and-policy-support/Pages/Influenza.aspx for more information



NAVY AND MARINE CORPS PUBLIC HEALTH CENTER
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Surveillance Advisory: Seasonal Influenza

Issue

- Influenza vaccine for the upcoming flu season is becoming available throughout the Department of Defense (DoD) and immunization campaigns are underway.
- DoD policy requires influenza vaccination for all Active Duty and Reserve Component personnel.
- Navy Medicine influenza surveillance strategy includes central analysis of electronic clinical data, local ESSENCE monitoring, Fleet Disease and Injury (D&I) tracking, and reporting of hospitalizations associated with laboratory confirmed influenza via Disease Reporting System internet (DRSi).
- The topic of September's Tri-Service Disease Surveillance Training is "Influenza Surveillance". For information about how to join this online discussion on 26 September, contact the DRSi helpdesk as described below.

Background

Influenza, or the flu, is a viral illness characterized by the sudden onset of fever, respiratory symptoms and fatigue. Influenza season in the United States typically peaks in January and February and can begin as early as October. While most people infected with the influenza virus recover quickly, complications can lead to more severe disease presentation and extended illness. The military training and shipboard environments are particular areas of concern with regards to disease spread due to close living quarters.

Influenza policy and guidance resources can be found on NMCPHC's Influenza webpage. Vaccination is the best way to prevent illness from influenza, and is required for all active duty and reserve component personnel. Navy Medicine influenza surveillance strategy includes MTF participation in the US Air Force School of Aerospace Medicine (USAFSAM) sentinel laboratory surveillance program, reporting of influenza hospitalizations, syndromic tracking of influenza-like-illness via ESSENCE or D&I, and NMCPHC's weekly influenza reports based on laboratory tests and results, pharmacy transactions, clinical encounters and vaccination records recorded in the direct care military system.

NMCPHC Surveillance and Reporting Guidance and Additional Resources

1. Navy Medicine's medical surveillance and medical event reporting is guided by Chapter 22 of the Navy's Manual of the Medical Department and BUMEDINST 6220.12C.
   a. Navy and Marine Corps units providing patient care should report hospitalization associated with laboratory confirmed influenza in any patient under the age of 65 via DRSi as an "Influenza-associated Hospitalization".
      i. Patients seen in the outpatient clinic setting who are lab positive for influenza are NOT required to be reported unless they become hospitalized.

28 August 2017

Army Influenza Surveillance

- Uses a combination of CHCS Ad Hoc Reporting, DRSi and ESSENCE
- CHCS flat files are sent from each Army lab on a weekly basis to APHC containing all positive and negative results of PCRs, cultures and rapid antigen testing
- Army influenza reports can be found at:

https://tiny.army.mil/r/GwOFk/APHCInfluenzaReport

Resources

USAFSAM/PHR Epidemiology Consult Service: Influenza Surveillance
https://gumbo2.area52.afnoapps.usaf.mil/epi-consult/influenza/

Navy and Marine Corps Public Health Center: Influenza homepage
http://www.med.navy.mil/sites/nmcphc/program-and-policy-support/Pages/Influenza.aspx
Navy and Marine Corps Weekly Influenza SITREP
https://www.med.navy.mil/sites/nmcphc/epi-data-center/influenza/Pages/default.aspx

Army Public Health Center: Influenza Reports
https://tiny.army.mil/r/GwOFk/APHCInfluenzaReport

DHA Public Health Division, Immunization Healthcare Branch, Influenza – Seasonal vaccine information:
http://www.vaccines.mil/Influenza_-_Seasonal

FLU.GOV "Know what to do about the flu"
http://www.flu.gov/

CDC Influenza Home Page
http://www.cdc.gov/flu/

WHO Global Influenza Surveillance Network: Manual for the laboratory diagnosis and virological surveillance of influenza
http://whqlibdoc.who.int/publications/2011/9789241548090_eng.pdf

Contact Information

Army: APHC – Disease Epidemiology Program
Aberdeen Proving Ground – MD
Comm: (410) 436-7605 DSN: 584-7605
usarmy.apg.medcom-aphc.mbx.disease-epidemiologyprogram13@mail.mil

Navy: Contact your cognizant NEPMU
NEPMU2: COMM: (757) 950-6600; DSN: (312) 377-6600
Email: usn.hampton-roads.navhospporsva.list.nepmu2norfolk- threatassess@mail.mil
NEPMU5: COMM: (619) 556-7070; DSN (312) 526-7070
Email: usn.san-diego.navenpvntmedufive.list.nepmu5-health-surveillance@mail.mil
NEPMU6: COMM: (808) 471-0237; DSN: (315) 471-0237
Email: usn.jbphh.navenpvntmedusixhi.list.nepmu6@mail.mil
NEPMU7: COMM (int): 011-34-956-82-2230 (local): 727-2230; DSN: 94-314-727-2230
Email: NEPMU7@eu.navy.mil

Air Force: Contact your MAJCOM PH or USAFSAM/PHR
USAFSAM / PHR / Epidemiology Consult Service
Wright-Patterson AFB, Ohio
Comm: (937) 938-3207 DSN: 798-3207
episervices@us.af.mil

QUESTIONS ?